

**REMARKS**

Applicant thanks the Examiner for examining the application. Applicant has amended claim 27, as is discussed below. Applicant has also canceled claims 2-3, 15, 20-21, and 33, and has amended claims 1, 4, 10, 14, 16-17, 19, 22, 28, 32, and 34-35. Applicant has also added new claims 37-38. Support for the amendment of claims 1, 4, 10, 14, 16-17, 19, 22, 28, 32, and 34-35 may be found throughout the specification, and the amendment of claims 1, 4, 10, 14, 16-17, 19, 22, 28, 32, and 34-35 does not constitute the addition of new matter. Support for new claims 37-38 may be found throughout the specification, and the addition of new claims 37-38 does not constitute the addition of new matter. With the amendment, claims 1, 4-14, 16-19, 22-32, and 34-38 are now pending.

**Claim Objections**

The Examiner objected to claim 27 because of informalities, namely it being listed as depending from claim 28.

Applicant has amended claim 27 to properly state its correct dependence from claim 26, as deduced by the Examiner. Applicant thanks the Examiner for detecting this typographical error.

**Claim Rejections – 35 U.S.C. § 103(a)**

The Examiner rejected claims 1-11, 13-29, and 31-36 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,868,094 to Bordonaro et al. in view of U.S. Patent No. 7,127,508 to Edmison et al.

Applicant has amended Applicant's independent claim to include the limitations formerly present in Applicant's dependent claims 2 and 3, now canceled. (Applicant also correspondingly amended Applicant's dependent claims 4 and 10, which previously depended from now-canceled claim 3, so that these claims properly depend from Applicant's amended independent claim 1.) Applicant's amended independent claim 1 now requires, among other things, creating a measurement packet group containing a

set of measurement packets, by, for each measurement packet: calculating a measurement sequence number for that measurement packet that indicates the measurement packet identity relative to a total number of measurement packets to be created within the measurement packet group; inserting the measurement sequence number for that measurement packet into the measurement packet; and inserting a measurement group count into the measurement packet, the measurement group count indicating the total number of measurement packets to be created within the measurement packet group, the measurement sequence number and measurement group count allowing the target agent to compute a packet loss metric of measurement packets within the measurement packet group.

The Examiner cited to Fig. 3, elements 20, 44, and 56, and to col. 10 lines 52-53 and lines 58-64 of Bordonaro et al. as teaching or suggesting these limitations.

However, neither the cited text nor any other text of Bordonaro et al. teaches or suggests creating a measurement packet group containing a set of measurement packets, by, for each measurement packet: calculating a measurement sequence number for that measurement packet that indicates the measurement packet identity relative to a total number of measurement packets to be created within the measurement packet group; inserting the measurement sequence number for that measurement packet into the measurement packet; and inserting a measurement group count into the measurement packet, the measurement group count indicating the total number of measurement packets to be created within the measurement packet group, the measurement sequence number and measurement group count allowing the target agent to compute a packet loss metric of measurement packets within the measurement packet group, as required by Applicant's amended independent claim 1.

Bordonaro et al. teaches that the sender (identified as element 18a in FIG. 3 of Bordonaro et al.) sets a `send_seq_no` field, see col. 7 lines 47-48, that "represents the number of packets the sender has sent out thus far during this instance of jitter probe 20", col. 7 lines 48-50. In other words, all that the sender of Bordonaro et al. includes in a packet is a number of that packet in a sequence, but that number and that packet contain no information regarding how many total packets are in the sequence. In other

words, the sender of Bordonaro et al. may send out 4 packets, each one numbered successively (i.e., 1, 2, 3, 4). When the receiver receives the packet numbered as 1, all the receiver knows is that Bordonaro et al. has sent out one packet; the receiver will not know that there is a second packet, a third packet, or a fourth packet until (i) those packets are all received or (ii) some subset of those packets are received – and even then, the receiver may not know that 4 packets were sent. If, for example, the receiver as taught by Bordonaro et al. receives only the packets numbered 1 and 3, the receiver has no way of knowing that the sender sent out a group of 4 packets, or that there is more than 1 packet missing. The sender may be able to determine this information, but only after the packets are also processed by the receiver and send back to the sender; *see at least* col. 9 lines 7-20. Applicant's amended independent claim 1 includes no such requirement.

This brings up a key distinct that Applicant wishes to note. Applicant respectfully notes that any citations by the Examiner to actions performed by the receiver in Bordonaro et al. as applying to these limitations are irrelevant and improper because these limitations are a further modifier on the limitation of “creating a measurement packet group containing a set of measurement packets” that is, according to the language of Applicant's amended independent claim 1, clearly performed only by the initiator agent (equivalent, the Examiner argues, to the sender taught in Bordonaro et al.), and not the target agent (equivalent, the Examiner argues, to the receiver taught in Bordonaro et al.). The one exception to this statement is by the initiator agent inserting a measurement group count into the measurement packet, the target agent is then able to compute a packet loss metric of measurement packets within the measurement packet group.

Thus, in other words, Bordonaro et al. fails to calculate a measurement sequence number for that measurement packet that indicates the measurement packet identity relative to a total number of measurement packets to be created within the measurement packet group. Instead, all Bordonaro et al. teaches is that a packet is identified by a number, but that number does not tell how many packets are in the group.

Bordonaro et al. thus also fails to inserting such a number into the packet; indeed, if Bordonaro et al. does not calculate the measurement sequence number, as required by Applicant's amended independent claim 1, Bordonaro et al. cannot insert such a number into a packet.

Finally, Bordonaro et al. fails to insert a measurement group count into the measurement packet, the measurement group count indicating the total number of measurement packets to be created within the measurement packet group, the measurement sequence number and measurement group count allowing the target agent to compute a packet loss metric of measurement packets within the measurement packet group. As described above, using the information provided by the sender, **the receiver** (i.e., the equivalent to the target agent, as argued by the Examiner) as taught by Bordonaro et al. is incapable of computing a packet loss metric, because the receiver will never know for sure how many packets the sender sent to it. Indeed, according to the teachings of Bordonaro et al., it is **only** the sender itself that could make this determination, **and only after** the receiver adds its own Receive Sequence Number ("recv\_seq\_no") to each received packet and then sends it back to the sender; *see at least* col. 9 lines 7-46. Applicant's amended independent claim 1 includes no such limitations, and indeed, provides for the opposite – namely, that the target agent (i.e. receiver according to the Examiner's argument) is able to compute a packet loss metric.

Thus, for at least any of the reasons given above, Bordonaro et al. does not teach or suggest Applicant's amended independent claim 1, either alone or in combination with Edmison et al. Applicant's amended independent claim 1 is thus not obvious in light of Bordonaro et al., either alone or in combination with Edmison et al., and therefore, Applicant's amended independent claim 1 is allowable over Bordonaro et al., either alone or in combination with Edmison et al.

Applicant has amended Applicant's independent claims 14, 19, and 32 similarly to the amendments made to Applicant's allowable amended independent claim 1. (In other words, Applicant has added the limitations formerly found in now-canceled

dependent claims 15, 20-21, and 33 to independent claims 14, 19, and 32, respectively. Applicant has also amended dependent claims 16-17, 22, 28, and 34-35 to correct their dependencies from the canceled claims.) Thus, Applicant's amended independent claims 14, 19, and 32 all include limitations similar to those of Applicant's allowable amended independent claim 1. Therefore, for at least the reason(s) given above with regards to Applicant's allowable amended independent claim 1, Applicant's amended independent claims 14, 19, and 32 are themselves not obvious in light of Bordonaro et al. in view of Edmison et al., and thus, Applicant's amended independent claims 14, 19, and 32 are allowable over the combination of Bordonaro et al. with Edmison et al.

Applicant's dependent claims 2-11, 13, 15-18, 20-29, 31, and 33-36 depend from, respectively, Applicant's allowable amended independent claims 1, 14, 19, and 32. Therefore, for at least the reason(s) given above with regards to Applicant's allowable amended independent claims 1, 14, 19, and 32, Applicant's dependent claims 2-11, 13, 15-18, 20-29, 31, and 33-36 are themselves not obvious in light of Bordonaro et al. in view of Edmison et al., and thus, Applicant's dependent claims 2-11, 13, 15-18, 20-29, 31, and 33-36 are allowable over the combination of Bordonaro et al. with Edmison et al.

Applicant further notes that Applicant's dependent claims 4 and 22, 10 and 28, 13 and 31, and 17 and 35 are all allowable on their faces over Bordonaro et al., either alone or in combination with Edmison et al.

Applicant's dependent claims 4 and 22 require, among other things, wherein forwarding each measurement packet in the measurement packet group to a target agent comprises, for each measurement packet: . . . transmitting the measurement packet containing the sequence number for that measurement packet, the group count, and the measurement transmit timestamp to the target agent. The Examiner cited to element 100 of FIG. 4 of Bordonaro et al. as teaching or suggesting this limitation.

However, for at least the reasons given above with regards to Applicant's allowable amended independent claim 1, Bordonaro et al. does not teach or suggest a group count, and thus Bordonaro et al. **cannot** teach or suggest transmitting a packet that contains, among other things, the group count, to the target agent, as required by Applicant's dependent claims 4 and 22. For this reason alone, Applicant's dependent claims 4 and 22 are allowable over Bordonaro et al. and Edmison et al., either alone or in combination.

Applicant's dependent claims 10 and 28 require, among other things, wherein receiving a response packet group containing a set of response packets from the target agent comprises, for each response packet: . . . identifying a response group count within that response packet, the response group count indicating the total number of response packets to be created within the response packet group for transmission to the initiator agent; and wherein calculating at least one network link metric from the at least one target performance metric in each response packet of the response packet group comprises: identifying a completion event for receipt of the response packet group, and in response to identifying the completion event, determining at least one packet loss metric of packets lost in transmission between the initiator agent and target agent based upon received response sequence numbers and a total number of packets in a packet group identified by the response group count. The Examiner cited to col. 12 lines 31-32 and 56-60 of Bordonaro et al. as teaching or suggesting these limitations.

Similar to the discussion above with regards to Applicant's allowable amended independent claim 1, which makes clear that Bordonaro et al. does not teach or suggest a measurement group count, Bordonaro et al. also does not teach or suggest a response group count. Thus, it is impossible for Bordonaro et al. to teach or suggest using a response group count for any purpose, such as identifying such a count or determining at least one packet loss metric based upon (among other things) such a count, both as required by Applicant's dependent claims 10 and 28.

Thus, for at least any of the reasons given above, Applicant's dependent claims 10 and 28 are allowable over Bordonaro et al. and Edmison et al., either alone or in combination.

Applicant's dependent claims 13 and 31 require, among other things, wherein the method comprises: . . . and for each measurement packet group in each iteration in the sequence of iterations, adjusting the amount of payload data inserted into the measurement packet sequence group to identify how the calculated at least one network link metric changes based on the adjusted amount of payload data, at least one of the amounts of payload data inserted into the measurement packet causing an overall size of the measurement packet to substantially reflect application level traffic between the initiator agent and the target agent. The Examiner cited to col. 9 lines 2-8 of Edmison et al. as teaching or suggesting this limitation.

However, neither the cited text nor any other text of Edmison et al. teaches or suggests wherein the method comprises: . . . and for each measurement packet group in each iteration in the sequence of iterations, adjusting the amount of payload data inserted into the measurement packet sequence group to identify how the calculated at least one network link metric changes based on the adjusted amount of payload data, at least one of the amounts of payload data inserted into the measurement packet causing an overall size of the measurement packet to substantially reflect application level traffic between the initiator agent and the target agent, as required by Applicant's dependent claims 13 and 31.

The Examiner's argument is based on the statement in Edmison et al. that, if IP packets are being encapsulated in Ethernet, *see* col. 8 lines 61-62, then because Ethernet requires a minimum payload data size of 38 bytes, *see at least* col. 8 lines 63-65 and col. 9 lines 3-8, if any IP packet payload has less than 38 bytes, extra unused data **fields** must be added to satisfy this requirement of Ethernet (emphasis added). With all due respect to the Examiner, adding unused data fields to a packet's payload to satisfy the minimum transmission requirements of a protocol is not equivalent to for each measurement packet group in each iteration in the sequence of iterations,

adjusting the amount of payload data inserted into the measurement packet sequence group to identify how the calculated at least one network link metric changes based on the adjusted amount of payload data. Applicant's dependent claims 13 and 31 perform this data insertion for a specific purpose – to test what affect different size payloads have on a calculated at least one network link metric. In contrast, Edmison et al. teaches adding these extra unused data fields to only those packets with payloads that are below the 38 byte threshold, and not adjusting the amount of payload data inserted for each measurement packet group in each iteration in a sequence of iterations, as required by Applicant's dependent claims 13 and 31. Edmison et al. may not need to add anything to any packets; it is easy to imagine a situation where all the packets being transmitted meet the 38 byte minimum payload requirement. Applicant's dependent claims 13 and 31 place no such restrictions upon their limitations; that is, the payload data is **always** inserted when these actions are performed. Finally, because Edmison et al. teaches that data is added only when a payload is short of the minimum 38 bytes, Applicant fails to see how simply adding a small number of bytes to a payload, so that it has at least 38 bytes, is sufficient to constitute an overall size of the measurement packet that substantially reflect application level traffic between the initiator agent and the target agent, as required by Applicant's dependent claims 13 and 31.

Therefore, for at least any of the reasons given above, neither Bordonaro et al. nor Edmison et al., alone or in combination, teach or suggest Applicant's dependent claims 13 and 31, and thus Applicant's dependent claims 13 and 31 are not obvious in light of Bordonaro et al. or Edmison et al., either alone or in combination. Therefore, Applicant's dependent claims 13 and 31 are allowable on their faces over Bordonaro et al. and Edmison et al., either alone or in combination.

Applicant's dependent claims 17 and 35 require, among other things, calculating a packet loss metric of packets lost in transmission between the initiator agent and target agent based upon received measurement sequence numbers and a total number of packets in a measurement packet group identified by the measurement group count.



The Examiner cites to col. 12 lines 30-32 of Bordonaro et al. as teaching or suggesting this limitation.

However, as discussed above with regards to Applicant's allowable amended independent claim 1, Bordonaro et al. does not teach or suggest a measurement group count, and therefore Bordonaro et al. **cannot** teach **the target agent** calculating a packet loss metric of packets lost in transmission between the initiator agent and the target agent based on such a count, as required by Applicant's dependent claims 17 and 35. Indeed, as also discussed above with regards to Applicant's allowable amended independent claim 1, the only agent taught by Bordonaro et al. that is able to calculate such a packet loss metric is the **sender** (i.e., initiator agent), and **not** the receiver (i.e., target agent), as is required by Applicant's dependent claims 17 and 35. The Examiner himself makes this point clear by arguing that the "**sender** receives the reply" and the "**sender** knows there was 3-2=1 packet loss"; Office Action page 17 lines 1-2.

Thus, for at least any of these reasons, Applicant's dependent claims 17 and 35 are allowable over Bordonaro et al. and Edmison et al., either alone or in combination.

The Examiner then rejected claims 12 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Bordonaro et al. in view of Edmison et al. and further in view of U.S. Patent No. 6,711,171 to Dobbins.

Applicant's dependent claims 12 and 30 depend from, respectively, Applicant's allowable amended independent claims 1 and 19. Therefore, for at least any of the reasons given above with regards to Applicant's allowable amended independent claims 1 and 19, Applicant's dependent claims 12 and 30 are themselves not obvious in light of Bordonaro et al. in view of Edmison et al., either alone or in combination, and so Applicant's dependent claims 12 and 30 are not obvious in light of Bordonaro et al. in view of Edmison et al. and further in view of Dobbins. Thus, Applicant's dependent claims 12 and 30 are allowable over Bordonaro et al. in view of Edmison et al. and further in view of Dobbins.

Applicant respectfully notes that Applicant's dependent claims 12 and 30 are allowable on their faces over Bordonaro et al. in view of Edmison et al. and further in view of Dobbins.

Applicant's dependent claims 12 and 30 require, among other things, wherein the measurement packets and the response packets include a packet verification identity including cryptographic information allowing the initiator agent and target agent to verify their identity using a cryptographic verification process. The Examiner cited to col. 7 lines 20-39 of Bordonaro et al. as teaching or suggesting this limitation.

With all due respect to the Examiner, Applicant respectfully submits that to argue that a simple numeric code, used to represent a probe type so that various probe types may be distinguished, *see* col. 7 lines 20-23, is equivalent to a packet verification identity including cryptographic information such that the initiator agent and the target agent may verify packet identity using a cryptographic verification process, is stretching the concept of "suggesting" past the breaking point. There is no mention or suggestion anywhere in Bordonaro et al. of a packet verification identity including cryptographic information, and there certainly is no mention or suggestion of a cryptographic verification process, much less such a process that makes use of such information. Simply stated, a simple numeric identifier does not contain cryptographic information.

For this reason alone, Applicant's dependent claims 12 and 30 are allowable over Bordonaro et al., Edmison et al, and Dobbins, either alone or in any combination.

Finally, Applicant respectfully notes that, though the Examiner has rejected all the claims under § 103(a), the Examiner has failed to provide any motivation whatsoever for combining any of the references. The Examiner has provided the details as to **how** the references could be combined, but has not provided a reason as to **why** the references should be combined. Even in light of the Supreme Court's decision in *KSR*, Examiners are still required to provide some indication of why references should be combined. As the Examiner has failed to do so, all of the rejections under § 103(a) are improper and incomplete, and thus all of the claims are allowable over the various cited references.

**CONCLUSION**

Applicant believes this Amendment and Response to be fully responsive to the present Office Action. Thus, based on the foregoing Remarks, Applicant respectfully submits that this application is in condition for allowance. Accordingly, Applicant requests allowance of the application.

Applicant hereby petitions for any extension of time required to maintain the pendency of this case. If there is any fee occasioned by this response that is not paid, please charge any deficiency to Deposit Account No. 50-3735.

Should the enclosed papers or fees be considered incomplete, Applicant respectfully requests that the Patent Office contact the undersigned collect at the telephone number provided below.

Applicant invites the Examiner to contact the Applicant's undersigned Attorney if any issues are deemed to remain prior to allowance.

Respectfully submitted,

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/SPM/

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